EARTH-SPACE SCIENCE EDUCATION – B.S.Ed.

Name: Address: Phone:

General Science / Environmental Education Certificates

*With Advising and the use of this checksheet, the student will graduate with the above three teaching certificates.

All courses are three credits unless noted in parentheses

Geography-Earth Science (27+ Credits)

Earth &Alliied Science (15 credits) When? Grade

Required:

ESS 210 Physical Geology
ESS 212 Historical Geology
ESS 220 Oceanography
ESS 355 Meteorology
PHY 108 Astronomy

Earth Science Electives (15 credits)

ESS 108 Conservation of Natural Resources
ESS 214 Geology of National Parks
ESS 404 Applied Meteorology and Climatology
ESS 442 Environmental Geology
GEO 202 GIS I
GEO 203 Climatology
GEO 224 Soils
GEO 226 Hydrology
GEO 306 Geomorphology
GEO 339 Remote Sensing
GEO 352 Cartography
GEO 363 GIS II
GEO 397 Introduction to Research
GEO 420 GIS III
GEO 440 Field Techniques
GEO 444 Environmental Land Use Planning
Marine Science Consortium (1-6 cr.)

Professional Education Requirements (34 Cr.)

Required:

TCH 205 American School
TCH 260 Educational Psychology
EDU 440 Teaching of Science Sec. School (4)
EDU 441 Curriculum and Eval. In Sec. Science
EDU 495 Student Teaching/ Prof. Pract. (15)
EEC 411 Intro to Exceptionality
RDG 329 Reading in the Content Area

Environmental Education (3 Credits)

EDU 410 Environmental Educ Practicum

-All education majors must pass the first level of PRAXIS assessments (PPST reading, math, and writing) before earning 48 credits of course work. These basic skills tests must be passed before students are permitted to take any 300 level or above education course

Allied Sciences (15 credits)

When? Grade

Biology (9 Credits By Advisement)

BIO 115 Principles of Bio I (4)(required for Ecology)
BIO 116 Principles of Biology II (4)
BIO 145 Problems of the Environment
BIO 242 Ecology (Prereq. BIO 115 and Soph Standing)
BIO 248 Field Natural History /BIO 208 Field Biology
BIO 311 Ornithology (prereq: BIO 115)
BIO 448 Field Botany and Plant Taxonomy(Prereqs)

Chemistry (8 Credits)

CHM 121 Chemical Bonding
CHM 125 Lab IB Stoichiometry and Reactions (1)
CHM 122 Chemical Dynamics
CHM 126 Lab IIB Equilibrium and Instrument (1)

Physics (8 Credits)

PHY 121 Introductory Physics I (3)
PHY 123 Lab (1)
PHY 122 Introductory Physics II (3)
PHY 125 Lab (1)

Math (6-9 Credits By Advisement)

MAT 165 Probability with Statistical Reasoning
MAT 175 Pre-Calculus
MAT 211 Calculus I
MAT 212 Calculus II

Geographic Information Systems (GIS) Certificate (12 credits) (optional)

Required:

GEO 202 GIS I: Introduction to GIS
GEO 363 GIS II: Intermediate GIS

Select Two of the Following Courses:

GEO 339 Remote Sensing
GEO 352 Cartography
GEO 420 GIS III: Advanced GIS
GEO 425 Image Processing
GEO 440 Field Techniques
GEO 441 Quantitative Methods

GPA 1st Semester 2nd Semester Cum

GPA 3rd Semester 4th Semester Cum

GPA 5th Semester 6th Semester Cum

GPA 7th Semester 8th Semester Cum

General Education (48+ Credits)

5 Courses –Total of 15 Hours

Fluency in Writing (3 credits) ENG 101, ENG 106 or ENG 110

Fluency in Speaking (3 credits) HCS 100

Mathematical Competency (3 credits)

Historical Perspective(6) HIS 105 and HIS 106

Category A: (1 Course)
Logic and Numbers for Rational Thinking

Category B: (3 Courses)
Linguistic, Literary, Artistic and Cultural Traditions

Category C: (3 Courses)
Biological and Physical Sciences

Category D: (2 Courses)
Political, Economic, and Geographic Sciences

Category E: (2 Courses)
Social and Behavioral Sciences

General Education

Required Skills and Competencies	*Category A—Logic and Numbers for Rational Thinking (One course - 3 credit hours)*	*Category B—Linguistic, Literary, Artistic, and Cultural Traditions (3 courses - 9 credit hours)*	*Category C—Biological & Physical Sciences (3 courses - 9 credit hours)*	*Category D—Political, Economic, and Geographic Sciences (2 Courses - 6 Credit Hours)*	*Category E—Social and Behavioral Sciences (2 Courses - 6 Credit Hours)*	*University Diversity Requirement*
At Shippensburg, the study and investigation begins with the completion of courses, usually taken during a student's first or second year, in four required basic skills. These skills are fluency in writing, fluency in speaking, competency in math, and cultural awareness through historical perspective. To achieve these basic skills, undergraduates are required to take five courses for a total of 15 credit hours: ***Fluency in Writing.*** Students must take one of the following for 3 credit hours: ENG101 College Writing, or ENG110 Advanced Placement Writing. ***Fluency in Speaking.*** Students must take SPE 100 Basic Oral Communication for 3 credit hours. ***Mathematical Competency.*** Students must take one mathematics course listed in Category A, Logic and Numbers for Rational Thinking, for 3 credit hours, or must place in the Advanced College Level through the university Mathematics Examination. ***Historical Perspectives.*** Students must take the following two courses for a total of six credit hours: HIS105 World History I HIS106 World History II ***Library/Information Skills*** An integral aspect of the gen edu program is the development of library and information skills. This requirement is fulfilled through the completion of a self-paced, on-line tutorial which provides hands-on experience in finding information. All students enrolled in ENG101 (College Writing) or ENG110 Advanced Writing must complete this tutorial.	The courses in this category emphasize the use of symbols as a means of expressing complex thoughts and information lucidly and accurately. **One** course must be taken from any of the following, with the exception the mathematics course selected under Basic Skills and Competencies may not be used for this requirement. CPS103 Overview Computer Science CPS180 Microcomputer Basic MAT105 Math for Liberal Studies MAT108 Finite Math MAT110 Fundamentals of Math I MAT 117 Applied Statistics MAT120 Basic Math Models MAT124 Precalculus MAT 165 Prob w/Stats Reasoning MAT181 Applied Calculus I MAT211 Calculus I PHL101 Intro to Philosophy PHL102 Critical Thinking PHL103 Intro. to Phil. of Mind PHL104 Intro. to Religious Stud. PHL105 Introduction to Ethical Theories and Problems	The courses are designed to acquaint the student with the richness & diversity of aspects of culture, especially in literary and artistic excellence. **One Course**--*Literature* **Two Courses** --*Humanities.* ***Literature* (one course)** ENG243 The Art of the Film ENG248 Intro to Culturally Diverse Literature of the U.S. ENG250 Intro to Literature FRN330 M. of French Lit. FRN331 M. of Francophone Lit. GER151 German Cinema GER321 Berlin GER322 Readings in 19th 20th Century German Literature SPN260 Intro to Lit. Studies SPN360 M. of Spanish Lit. SPN361 M. of Spanish-Amer Lit ***Humanities* (2 courses-diff. disc.)** ART101 Art Appreciation ART231 Art History I ART232 Art History II ART274 Intro. to Cultural Studio ART339 History of American Art FRN101 Beginning French I FRN102 Beginning French II FRN103 Intermediate French FRN150 French Civilization FRN200 Introduction to Reading FRN202 Inter. French Conver. FRN320 Commercial French I GER101 Beginning German I GER102 Beginning German II GER103 Intermediate German GER150 German Civ and Culture GER200 Introduction to Reading GER203 Inter. German Conver. GER215 Commercial German MUS121 Introduction to Music MUS228 Opera & Music Theatre MUS261 World Music SOC370 Sociology of the Arts SPE121 Introduction to Theater SPE240 Dramatic Narrative Film SPN101 Beginning Spanish I SPN102 Beginning Spanish II SPN103 Intermediate Spanish SPN150 Spanish Civ and Culture SPN200 Introduction to Reading SPN202 Inter Spanish Conver. SPN330 Commercial Spanish SPN385 Asp. de la Civiliz. Hisp. *Other language courses as offered may be taken in this category.	The courses in this category have two comprehensive objectives–1) to make clear what kinds of problems in the physical world are susceptible to scientific investigation and what kinds of solutions such investigation can produce and 2) to provide an appreciation of the practice of scientific research and methodology, with its interaction of experiment and hypothesis. **One** course must be taken from those listed in ***three*** of the following disciplines.* ANT121 Physical Anthropology BIO100 Basic Biology BIO105 Biological Sciences: A Laboratory Approach BIO115 Principles of Biology I BIO145 Problems of the Environment BIO150 Human Biology BIO208 Field Biology BIO248 Field Natural History CHM103 Chemistry: A Cultural Approach CHM105 Chemistry: An Observational Approach CHM121 Chemical Bonding ESS108 Conservation of Natural Resources ESS110 Introduction to Geology ESS111 Intro to the Atmosphere ESS210 Physical Geology PHY108 Astronomy PHY110 Physics for Society PHY115 Physical Science: A Laboratory Approach PHY121 Introduction to Physics I PHY205 Intermediate Physics I **Note: Students majoring in the biological or physical sciences are permitted to count one course from their major department toward satisfying this requirement. Natural science courses which carry one of the above courses as a prerequisite and required science courses for elementary education majors may also be counted toward this requirement.*	Institutions are formal ways which societies and cultures create over time to pursue activities important to them. Two of the most basic institutions in any large, collective society are its governmental structure and its economic system—that is, the ways which a society has chosen to regulate the interaction between individuals and groups and the ways which it has chosen to satisfy and organize its material needs. **One** course must be taken from those listed in ***two*** of the following disciplines. ECN101 Prin. of Macroeconomics ECN102 Prin. of Microeconomics ECN113 Principles of Economics GEO101 World Geography GEO103 Geog U.S. and Canada PLS100 U.S. Govt & Politics PLS141 Intro to Intl. Relations	An awareness and recognition of the disciplines which examine and analyze group and individual behavior is of increasing importance for all who seek to understand and to predict the patterns and processes of human activity. These disciplines examine the causes of human action and the diversity of its organization and structure. **One** course must be taken from those listed in ***two*** of the following disciplines. ANT111 Cultural Anthropology GEO140 Cultural Geography PSY101 General Psychology SOC101 Introduction to Sociology: Society and Diversity WST100 Intro to Women's St.	To complete the University diversity requirement, undergraduates are required to take one approved diversity course for a total of 3 credit hours. The following courses are the currently approved diversity courses. ART101 Art Appreciation CRJ361 Race, Ethnicity, & Crime ECH460 Family, School, & Comm. Partnerships in Early Childhood Education EEC411 Intro to Exceptionality ENG242 Intro to Multicul. Lit. ENG248 Intro to Culturally Diverse Lit of the U.S. ETH103 Intro. to Culturally Diverse Lit. GEO103 Cultural Geography GEO140 Geog of U.S. & Canada MGT447 Business and Society SOC101 Intro to Sociology: Society and Diversity SWK265 Underst. Human Diver. for Social Work Practice WST100 Intro to Women's Studies